its discharge. This can be by any number of mechanisms involving its own shape (slope, width, and thickness), as well as the shape of Crary Ice Rise. We observe that the separation of the raft has served to make the ice rise more streamlined to the discharge of Ice Stream B. This streamlining may be a direct result of the interaction between an accelerating ice stream and a forming ice rise.

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SEISMIC EVIDENCE FOR A THIN BASAL LAYER AT A SECOND LOCATION ON ICE STREAM B, ANTARCTICA

(Abstract)

by

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Seismic experiments have shown that a meters thick layer of unconsolidated sediment exists beneath Ice Stream B at a location that is several hundred kilometers up-stream from the grounding line. In previous work, we have proposed that a "coupling" line exists about 100 km up-stream from the grounding line. Above the coupling line, we believe that the dynamic behavior of Ice Stream B is dominated by deformation within the basal sediment layers and that erosion is taking place at the bottom of this layer. Below the coupling line, we believe that sliding on a lubricating water film becomes increasingly important and that the subglacial sediments are deposited as a delta. Preliminary results from a 30 km seismic profile near the coupling line of Ice Stream B show a prominent horizontal reflector several meters below the base of the ice; this reflector is underlain by a sequence of reflectors, each with a down-stream dip of about 1%. We believe that the horizontal and dipping reflectors represent, respectively, the topsets and foresets of the hypothesized delta.

DERIVATION OF FLOW-LAW PROPERTIES FROM BORE-HOLE TILT DATA: DISCUSSION OF THE DYE 3, CAMP CENTURY, AND BYRD STATION BORE-HOLE RESULTS

(Abstract)

by

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Derivation of flow properties from bore-hole tilts is a popular way of determining flow properties of "real" glacier ice. Many interpretations have been made of the measurements from the Camp Century bore hole (Paterson, 1983; Wolff and Doake, 1986), the Byrd Station bore hole (Paterson, 1983; Doake and Wolff, 1985), and the Dye 3 bore hole (Dahl-Jensen and Gundestrup, 1987; Pimienta and Duval, 1987) where the flow-law exponent in Glen's flow law has values ranging from 1 to 3. The great allowance for variations in the exponent is primarily due to the experimental error in the tilt measurements.

The high-quality bore-hole tilt data from the 2037 m deep Dye 3 bore hole are used to illustrate some of the difficulties which are connected with the use of field measurements to determine flow-law parameters. In the 250 m thick bottom layer of Wisconsin ice, where 80% of the deformation occurs, the deformation rates are enhanced by the varying impurity concentrations and crystal sizes.

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